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April 5, 2004

To:

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Examiner Michael J. Stahl
United States Patent and Trademark
Office

571-273-2360

From: David Alberti
650-833-2052

Client-Matter Number: 2102393-991130

Re: United States Patent Application, entitled: Optical Spectral Power Monitors Employing
Time-Division-Multiplexing Detection Schemes
Serial No.: 10/033,549
Inventor: Pavel G. Polynkin

Pages: - 3 - (including this form) Originals: ☐ will be mailed ☒ will not be mailed

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Attorney Docket No. 2102393-991130

TO: Attn. Examiner Michael J. Stahl
FAX (571) 273-2360

FR: David Alberti

RE: Application Serial No. 10/033,549 entitled "Optical Spectral Power Monitors Employing Time-Division Multiplexing Detection Schemes"

Dear Examiner Stahl,

Last week arranged having a telephone interview for the above-referenced case on Wednesday, April 7, 2004 at 1 pm EST. This communication is to briefly outline the issues that I would like to discuss during the interview.

In the latest Office action mailed January 2, 2004, you rejected all of pending claims 1-29, 31, 32, 35 and 36 under 35 U.S.C. §103(a) as being unpatentable over various combinations, including the recently cited reference of Tobias. In a previous Office action, you rejected the claims based on the Solgaard, Stafford, Braun and Saunderson references. In response to that action, the Applicants pointed out that none of the previously cited references disclosed an optical apparatus including an *array* of optical detectors, as recited in the claimed invention, which allowed the apparatus to monitor spectral channels in a time division multiplexed manner, while still allowing a select group of spectral channels to be monitored concurrently. These advantages are discussed for example in paragraphs [0023] and [0025] of the pending application. The multiple optical detectors also allowed for an apparatus that could monitor multiple spectral channels in a time division multiplexed manner, while concurrently monitoring distinct polarization components of the spectral channels.

Tobias was cited for its disclosure of multiple detectors, i.e., "array detectors". Namely, the Examiner asserted that it would be obvious to combine the array detectors of Tobias with the multiplexed systems of Solgaard and Stafford (also combining Braun and Saunderson) to provide the claimed inventions.

Applicants respectfully disagree. None of these references teaches or suggests a system that employs an array of detectors to provide *both* multiplexed and concurrent detection schemes. Solgaard and Stafford both teach multiplexed detection schemes using a single detector. Because these references disclose only a single detector, there is no suggestion or contemplation of concurrent detection of a group of channels, as discussed in Applicants' invention. Moreover, while Tobias does teach using an array of detectors, *it expressly teaches away from using both multiplexed and concurrent detection*, as provided and discussed in the present invention. Particularly, Tobias teaches that by using "parallel rather than sequential data acquisition" various advantages can be achieved, such as rapid acquisition of the "complete spectrum", "enhanced signal-to-noise ratio" and elimination of "moving parts", "resulting in reduced cost and improved life and stability." (Tobias, col. 4, lines 43-50). The express goal of eliminating moving parts directly contradicts the claimed inventions that employ individually controllable beam manipulating elements to provide both concurrent and sequential detection. Alternatively,

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Tobias teaches using a "chopper wheel" to provide an "inexpensive" single detector system. (See e.g., Tobias, col. 6, lines 3-42). Thus, Tobias teaches using *either* an array of detectors for performance considerations, *or alternatively*, using a single detector and chopper wheel for an inexpensive solution. Tobias does not contemplate or suggest (and in fact teaches away from) using both sequential and parallel detection schemes. Therefore, Applicants assert that the proposed combination is improper.

In summary, none of the prior art teaches or suggests using an integrated solution that provides for both concurrent and multiplexed (e.g., sequential) detection schemes.

Although Applicants believe that the claims are allowable in their present form, they would consider amending the claims to further clarify this unique difference and advantage if the Examiner believed that it would expedite allowance of the case. Applicants provide one example of such an amendment below:

Possible amendment to claim 1:

Claim 1 (currently amended)

An optical apparatus, comprising:

- a) an input port, providing a multi-wavelength optical signal;
- b) a wavelength-disperser that separates said multi-wavelength optical signal by wavelength into multiple spectral channels having a predetermined relative arrangement;
- c) an array of beam-manipulating elements positioned to correspond with said spectral channels; and
- d) an array of optical detectors, including a plurality of optical detectors each corresponding to a unique one of said spectral channels;

wherein said beam-manipulating elements are individually controllable, so as to selectively direct said spectral channels into said array of optical detectors concurrently and in a time-division-multiplexed sequence.

I look forward to discussing these issues during our telephone interview. If you have any questions, please do not hesitate to contact me at 650-833-2052.

Very truly yours,

David Alberti